



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/390,079 | 09/03/1999 | DARREN KERR | 112025-0167 | 6305 |

7590 10/27/2004

A SIDNEY JOHNSTON
CESARI AND MCKENNA LLP
88 BLACK FALCON AVENUE
BOSTON, MA 02210

| |
|----------|
| EXAMINER |
|----------|

ELLIS, RICHARD L

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2183

DATE MAILED: 10/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/390,079

Applicant(s)

KERR ET AL.

Examiner

Richard Ellis

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21, 28-36 and 38-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 28-36, and 38-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-21, 28-36, and 38-53 remain for examination. Claims 54-66 are newly presented for examination.
2. The text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.
3. The drawings are objected to under 37 CFR § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "micro-opcodes to initiate memory prefetches without requiring a dedicated instruction" claimed in claim 45 must be shown or the feature canceled from the claim. No new matter should be entered.
4. Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects must consist of two parts:
 - a) A *separate* letter to the Draftsman in accordance with MPEP § 608.02(r); and,
 - b) A print or pen-and-ink sketch showing changes in *red ink* in accordance with MPEP § 608.02(v).
5. Claims 36 and 52 are rejected under 35 USC § 101 because the claimed invention is directed to non-statutory subject matter. Applicant's claims 36 and 52 attempt to claim electromagnetic signals. Electromagnetic signals are not patentable because they do not fall within one of the statutory classes of subject matter allowed by 35 USC § 101.
6. New claims 63 is rejected under 35 USC § 101 because the claimed invention is directed to non-statutory subject matter. Applicant's claim 63 attempts to claim electromagnetic signals. Electromagnetic signals are not patentable because they do not fall within one of the statutory classes of subject matter allowed by 35 USC § 101.
7. Claim 45 is rejected under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed "micro-opcodes to initiate memory prefetches without requiring a dedicated instruction" is not described in the specification or drawings. Therefore, due to lack of

description, it is not possible for the specification to enable one skilled in the art to make and/or use the invention.

8. Claims 1-21, 28-36, and 38-53 are rejected under 35 USC § 103 as being unpatentable over Nakada, U.S. patent 5,638,526, in view of Asato, U.S. Patent 6,145,074.

Nakada and Asato were cited as prior art references in paper number 15, mailed June 27, 2003.

9. The rejections are respectfully maintained and incorporated by reference as set forth in the last office action, paper number 23, mailed May 21, 2004.

10. New claims 54-63 are rejected under 35 USC § 103 as being unpatentable over Nakada et al., U.S. patent 5,638,526, in view of Asato et al., U.S. Patent 6,145,074.

11. As to new claims 54-63, they do not teach or define above the invention claimed in claims 1-21, 28-26, and 38-53 and are therefore rejected under Nakada et al. in view of Asato et al. for the same reasons set fourth in the rejection of claims 1-21, 28-26, and 38-53, supra.

12. New claims 64-66 are rejected under 35 USC § 103 as being unpatentable over Nakada et al., in view of Asato et al. As to claims 64-66, they differ from the invention claimed in claims 1-21, 28-36, and 38-63 only by explicitly claiming "source operand bypassing". However, Nakada et al. taught "source operand bypassing" at col. 4 lines 23-27. Therefore, claims 64-66 are also rejected under Nakada et al. in view of Asato et al. for the same reasons set fourth in the rejection of claims 1-21, 28-36, and 38-63, supra.

13. In the remarks, applicant argues in substance:

- 13.1. That: "Applicant respectfully points out that MPEP 2106 IV, B, 1 (c) states:

"Natural Phenomena Such as Electricity and Magnetism.
... However, a signal claim directed to a practical application of electro-magnetic energy is statutory regardless of it's transitory nature."

Applicant respectfully points out that the [new] form of Claims 36 and 52 meet the "practical application" requirement of MPEP 2106 IV, B, 1 (c) because the claims are to: **"said electromagnetic signals carrying instruction for the practice of the method of,"** and then the method is that spelled out in the claims."

This is not found persuasive because applicant is misinterpreting the cited portion of the

MPEP. If applicant were to examine the opinion rendered in the CCPA case cited at that section of the MPEP (*In re Breslow*) applicant will recognize that the meaning of the MPEP text is that simply because something is transitory does not make it non-statutory for that sole reason alone. Accordingly, for the reasons set out in the last office action, applicant's claims 36, 52, and 63 are again rejected as directed to non-statutory subject matter.

13.2. That: "Applicant respectfully urges that one skilled in the art of processor instruction sets or use with micro-opcodes and memory prefetches would inherently understand how to make or use the invention as described in Applicant's Specification (page 10). Specifically, one skilled in the art, after reading Applicant's Specification and claims would understand fully that Applicant was in possession of, and as described in an enabling manner, the use of micro-opcodes that perform memory prefetches without requiring a dedicated instruction, by realizing that the *micro*-opcodes are contained within each instruction word, and to *not* require a *dedicated* instruction (i.e., may be *part of* the instruction word). Accordingly, Applicant believes that the drawing complies with al [sic] requirements of 37 C.F.R. § 1.83(a), and that claim 45 is in condition for allowance".

This is not found persuasive because the totality of the mention of such "micro-opcodes that perform memory prefetches without requiring a dedicated instruction" exists as the following single sentence on page 10 of applicant's specification:

"An instruction set architecture provides micro-opcodes to initiate memory prefetches without requiring a dedicated instruction." (specification, page 10).

Additionally, that sole single sentence exists at the last sentence of a paragraph, and from the discussion topic in the remainder of the paragraph, that final additional sentence seems wholly out of place and unrelated to the remainder of the paragraphs topic. The remainder of the paragraph discusses that the instructions of the system are VLIW in form and contain several sub-instructions within one larger word. Then, suddenly, at the end of the paragraph, a completely unrelated topic appears as an unsupported conclusion that "an architecture" (note, "an", not "the") provides this mysterious ability to "provide micro-opcodes to initiate memory prefetches without requiring a dedicated instruction". It would appear, from the context of the surrounding paragraph that the "micro-opcode" is itself a "dedicated" instruction in that it is "dedicated" (as the sole function) of performing memory prefetch operations. Therefore, it can't possibly both simultaneously exist ("provided") and not exist

("without requiring an ... instruction").

- 13.3. That: "Applicant claims a system and method for directly addressing various pipeline stage registers of a plurality of execution units in a processing engine. By directly addressing the registers, the plurality of execution units can utilize source operand bypassing by, for example, sharing source operands and/or results, without having to read a register file".

This is not found persuasive because Nakada et al. also taught direct source operand bypassing sufficient to read upon applicants claim language. Applicant's attention is directed to figure 4 of Nakada et al. where a source register (OP11) for an execution unit (ALU1) is directly bypassed (RCPS1, SEL11, SEI12, SEL21, SEL22) to any of four other source registers (OP11, OP12, OP21, OP22). Additionally, applicant's attention is drawn to Nakada et al. at col. 4 lines 23-27 where Nakada et al. states:

"This implements a register cache arrangement that allows the operand of the preceding instruction [a source operand] to be used unmodified by the next instruction [bypassed] without reading data from the register file (REG)."

This citation from Nakada et al. clearly shows that Nakada et al. provides exactly the sort of source operand bypassing, for exactly the same reason, as applicant is now claiming.

- 13.4. That: "Applicant's claimed use of *directly addressing* the registers of the pipeline obviates the need for additional logic, hardware or software, to interpret a coincidence of register numbers as instructions as in Nakada."

This is not found persuasive because applicant is arguing against the references individually. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the present rejection, the modifying reference of Asato et al. when applied to Nakada et al. obviates the need for Nakada et al.'s additional logic to interpret a coincidence of register numbers as instructions.

- 13.5. That: "Also, by sharing the source operand among the plurality of execution units, addresses of desired data and not be repeated, whether they are internal register addresses or external memory addresses (which can be very long)."

This is not found persuasive because at col. 4 lines 23-27 Nakada et al. details the exact same arrangement (source bypassing) for the exact same reason ("without reading data from

the register file").

13.6. That: "Nakada does not discuss *directly* addressing a source register."

This is not found persuasive because as seen from figure 4, Nakada et al. clearly discusses direct addressing of both OP11 and OP21 via use of lines RCPS1 and RCPS2.

13.7. That: "Asato does not discuss source operand bypassing nor sharing data among a plurality of execution units."

This is not found persuasive because the second point ("sharing data among a plurality of execution units") is very clearly disclosed by Asato et al. at fig. 6 where four execution units (22-1 ... 21-4) are showing sharing data (22). As to the first point ("source operand bypassing") a modifying reference is not required to show that which is already taught by a main reference. Had Asato et al. also taught source operand bypassing, the rejection would have been under 35 USC § 102 as anticipated by Asato et al. alone.

13.8. That: "Stated simply, Nakada is not relevant to Applicant's claimed invention because Nakada uses a comparator circuit rather than Applicant's novel values in Applicant's instruction set. Further, Asato has no disclosure whatever concerning Applicant's claimed source operand bypassing. Accordingly, Applicant's claims are believed to be in condition for allowance".

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

13.9. That: "[as to new claim 64] Applicant respectfully urges that neither Nakada nor Asato disclose *an instruction set defining a register decode value that specifies source operand bypassing*. To the contrary, Nakada only uses a hardware comparator circuit for determining a bypass, and Asato merely addresses result operand bypassing."

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Additionally, it has been clearly explained in the prior rejection and above how the combination of Nakada et al. and Asato et al. teaches "an instruction set defining a register decode value that specifies source

operand bypassing."

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a). The practice of automatically extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection has been discontinued by the Office. See 1021 TMOG 35.


A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

15. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Richard Ellis whose telephone number is (571) 272-4165. The Examiner can normally be reached on Monday through Thursday from 7am to 5pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Eddie Chan, can be reached on (571) 272-4162. The fax phone number for the USPTO is: (703)872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Richard Ellis
October 22, 2004



RICHARD L. ELLIS
PRIMARY EXAMINER